Detection principle is based on multiple elastic neutron-proton scatterings in organic scintillators. By measuring the scattering coordinates and determining the energy of recoil protons and time of flight of scattered neutrons, the energy spectrum and incident direction of primary neutrons can be reconstructed. We present the results of calibrations and further simulations that demonstrate that the instrument meets the requirements for unprecedented sensitive measurements of low-energy solar neutrons. We confirm that the instrument has an energy resolution of \(~20\%\) over a wide range of energies and that its angular resolution is of order 15 degrees allowing for heavy background suppression. Furthermore, the efficiency agrees with the Monte Carlo model allowing us to extrapolate to the full instrument that may be deployed on Solar Sentinels.

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